The Origin of the Continuous Spectra in Raman Scattering.

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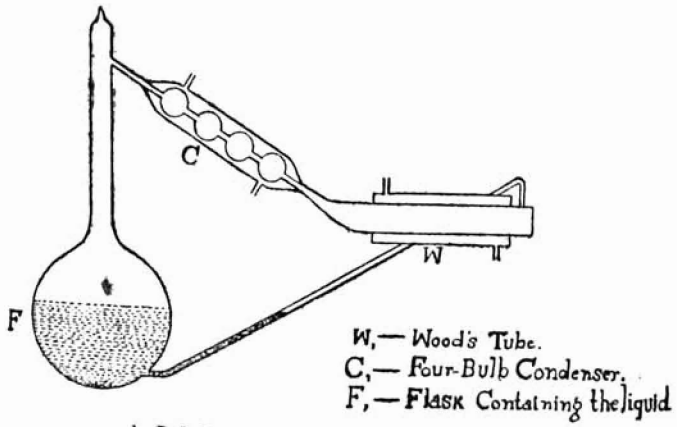
(Plate XXII).

In a recent publication,[1] we have suggested a mechanism of the production of the continuous spectra in the scattering of certain types of organic compounds. In support of our view we will give here a short account of an experiment which has been carried out at Dacca.

Freshly distilled colourless benzaldehyde was taken in an evacuated flask which was connected through a water-cooled condenser to a Wood's tube of the usual pattern, which was further provided with a return tube which again connected it direct to the original flask. Air was carefully avoided by evacuating and a preliminary boiling of the liquid and the apparatus was afterwards sealed off. A diagram of the experimental arrangement is given.



[1] Ind. Journ. Phys., Vol. V. Part I, 1930.

In a series of exposures, by means of continuous circulation of benzaldehyde, which was kept boiling in an oil-bath, the liquid in the Wood's tube was kept absolutely colourless and the resulting Raman spectrum was obtained (Plate XXII, Fig. a.) The plate was absolutely free from all continuous spectra, the Raman lines appearing in great intensity, which showed clearly the fine structure of the lines, the narrow groups being clearly resolved. The exposure ranged from $1\frac{1}{2}$ to 2 hours.

In another set of exposures we stopped the circulation; the liquid gradually developed a yellow colour, which was noticeable after about fifteen minutes and gradually increased in intensity. The resulting spectrum is given in Plate XXII, Fig. b. The plate used was a soft gradation panchromatic one to find out the extent of the continuous spectrum. The resulting continuous spectrum seems to have a sharp violet edge and extends continuously up to about 6710 A.U.

In benzaldehyde, the first product of photochemical action seems to be a yellow product which seems further to break down under the action of light and thus give rise to the continuous spectrum. Its absence suppresses the continuous spectrum altogether.

We desire to express our best thanks to Prof. S. N. Bose for his kind interest in the work.

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The 18th September, 1930.

Fig. *a*.

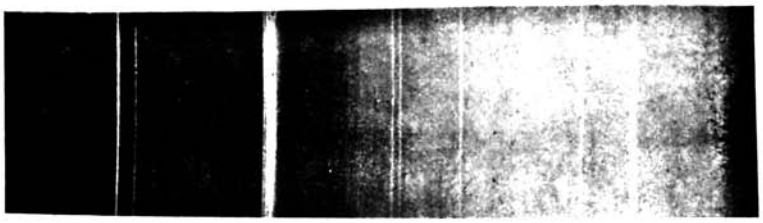

Fig. *b*.

Fig. *a*. Raman spectrum of benzaldehyde with constant circulation.

Fig. *b*. Raman spectrum when the circulation is stopped.